

**SOLUTIONS: PROBLEM SET 29 FROM SECTION 12.3**

2.

(a)  $2^{\frac{1}{3}} = [1; 3, 1, 5, 1, 1, \dots]$

(b)  $2\pi = [6; 3, 1, 1, 7, 2, \dots]$

(c)  $\frac{e-1}{e+1} = [0; 2, 6, 10, 14, 18, \dots]$

(d)  $\frac{e^2+1}{e^2-1} = [0; 1, 3, 5, 7, 9, \dots]$

4. The initial convergents for  $e$  are  $2, 3, \frac{8}{3}, \frac{11}{4}, \frac{19}{7}, \frac{87}{32}, \frac{106}{39}, \frac{193}{71}, \frac{1264}{465}, \frac{1457}{536}$ . The last of these is the best rational approximation to  $e$  with denominator at most 536.